



Single-Axis Rotary Direct-Drive Nanopositioning Stage **ANT95R**

Miniature rotary stage with unrivalled precision & speed

ANT95R direct-drive rotary stages provide unprecedented motion performance, including in-position stability and minimum incremental motion down to 0.01 arc sec and below. Plus, with a height of only 48 mm, ANT95R's ultra-compact form factor allows for simple integration with other motion axes and systems. This combination of outstanding performance and small size helps to mitigate design tradeoffs without compromise. The direct-drive, ironless motor facilitates ultra-smooth motion with excellent dynamic performance, making ANT95R ideal for processes that require both high throughput and ultra-fine precision.

Key Applications

ANT95R stages are ideal for high-precision and high-dynamic motion applications, including:

- ◆ Photonics assembly & inspection
- ◆ Fiber alignment & optimization
- ◆ Optics manufacturing, testing & inspection
- ◆ Sensor testing & qualification
- ◆ Semiconductor processing & inspection
- ◆ Research & laboratory applications



KEY FEATURES:

- ◆ Offers **BEST-IN-CLASS** resolution & in-position stability
- ◆ Outstanding **ERROR MOTION PERFORMANCE**
- ◆ Ironless, direct-drive motor **ELIMINATES VELOCITY RIPPLE & COGGING EFFECTS**
- ◆ **CONTINUOUS- & LIMITED-ROTATION** configurations available
- ◆ **CLEAR APERTURE** for cable or hose feedthrough
- ◆ Easily combine with other Aerotech ANT-series stages & more to **ACHIEVE HIGHLY PRECISE, MULTI-AXIS MOTION**

ANT95R SERIES SPECIFICATIONS

Mechanical Specifications		ANT95R-360	ANT95R-180	ANT95R-020
Rotation Angle		±360° Continuous	180°	20°
Accuracy ⁽¹⁾	PLUS (-PL2)	3 arc sec	3 arc sec	3 arc sec
Resolution (Minimum Incremental Motion)		0.01 arc sec	0.01 arc sec	0.01 arc sec
Repeatability (Bi-Directional) ⁽¹⁾		1.5 arc sec	1.5 arc sec	1.5 arc sec
Repeatability (Uni-Directional)		0.5 arc sec	0.5 arc sec	0.5 arc sec
Tilt Error Motion	Synchronous	10 arc sec	N/A	N/A
	Asynchronous	3 arc sec	N/A	N/A
Axial Error Motion	Synchronous	2 µm	N/A	N/A
	Asynchronous	0.5 µm	N/A	N/A
Radial Error Motion	Synchronous	3 µm	N/A	N/A
	Asynchronous	1 µm	N/A	N/A
Maximum Speed ⁽²⁾		200 rpm	20 rpm	20 rpm
Maximum Acceleration		400 rad/s ²	400 rad/s ²	400 rad/s ²
In-Position Stability ⁽³⁾		0.005 arc sec	0.005 arc sec	0.005 arc sec
Aperture		11 mm	11 mm	11 mm
Maximum Torque (Continuous)		0.2 Nm	0.2 Nm	0.2 Nm
Load Capacity ⁽⁴⁾	Axial	2.0 kg	2.0 kg	2.0 kg
	Radial	1.5 kg	1.5 kg	1.5 kg
	Moment	2 Nm	2 Nm	2 Nm
Rotor Inertia (Unloaded)		0.00069 kg-m ²	0.00066 kg-m ²	0.00065 kg-m ²
Stage Mass		1.2 kg	1.2 kg	1.2 kg
Material		Aluminum Body/Black Hardcoat Finish		
MTBF (Mean Time Between Failure)		30,000 Hours		

Notes:

1. Certified with each stage. Requires the use of an Aerotech controller.
2. Maximum instantaneous speed reported; contact factory for specific requirements.
3. In-Position Jitter listing is 3 sigma value.
4. Axis orientation for on-axis loading is listed.
5. Specifications are per axis, measured 25 mm above the tabletop. Consult factory for multi-axis or non-standard applications.
6. All error motion specifications are measured at 60 rpm.
7. For high speed operation, customer payload must be balanced to G1.0 per ISO 1940.

Electrical Specifications	ANT95R
Drive System	Slotless, Brushless, Direct-Drive Rotary Motor
Feedback	Noncontact Linear Encoder
Maximum Bus Voltage	±40 VDC
Limit Switches	5 V, Normally Closed
Home Switch	Near Center

ANT95R SERIES ORDERING INFORMATION

Travel (Required)

-360	Continuous travel
-20	Limited travel, ± 10 degrees
-180	Limited travel, ± 90 degrees

Mounting Plate (Optional)

-MP	Mounting plate
-----	----------------

Performance Grade (Required)

-PL2	High-accuracy performance, PLUS
------	---------------------------------

Integration (Required)

Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire custom integration support with your system.

-TAS Integration - Test as system

Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller, and stage). This includes parameter file generation, system tuning, and documentation of the system configuration.

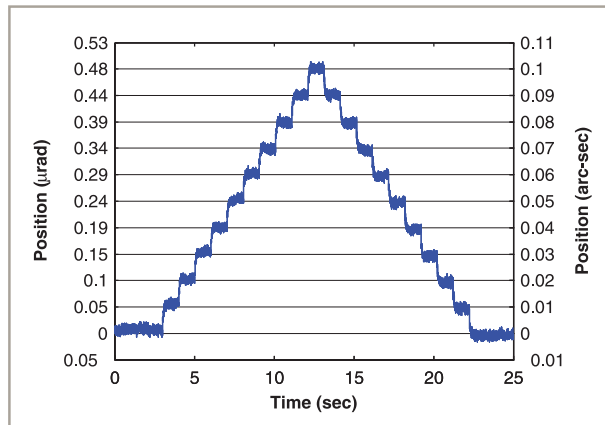
-TAC Integration - Test as components

Testing and integration of individual items as discrete components that ship together. This is typically used for spare parts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.

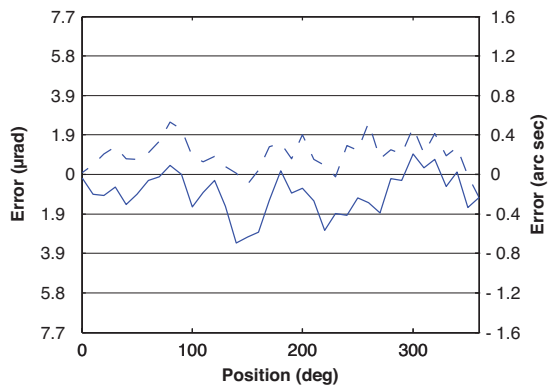


ANT95R SERIES SPECIFICATIONS

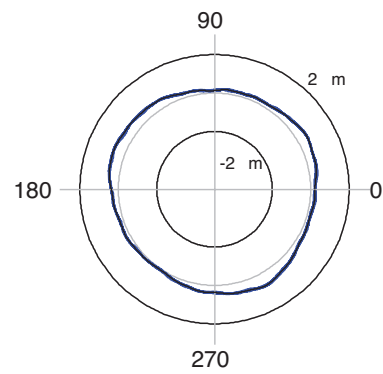
ANT95R SERIES PERFORMANCE



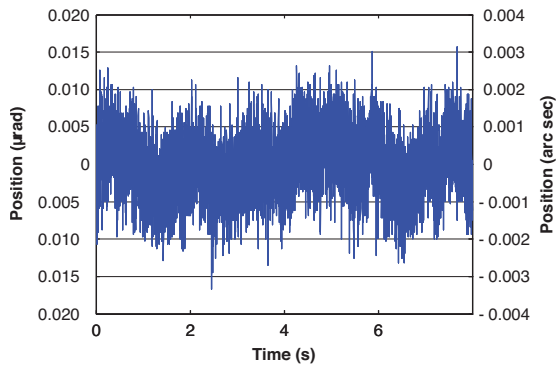
Capable of achieving a step size down to 0.05 μrad, ANT95R offers best-in-class minimum incremental motion.



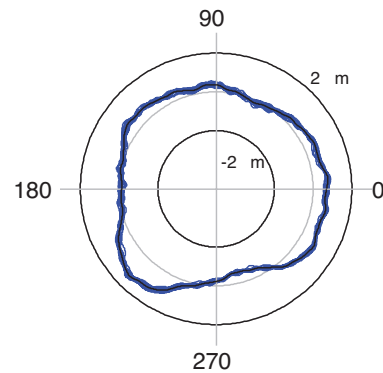
ANT95R accuracy plot showing excellent accuracy and bi-directional positioning capability.



ANT95R axial error plot illustrating outstanding synchronous and asynchronous error motion performance.

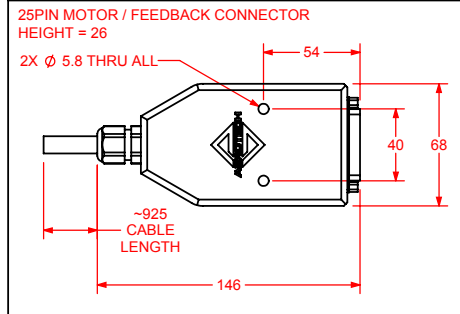
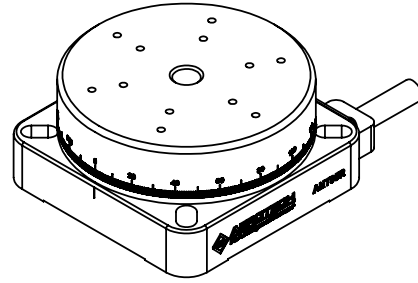
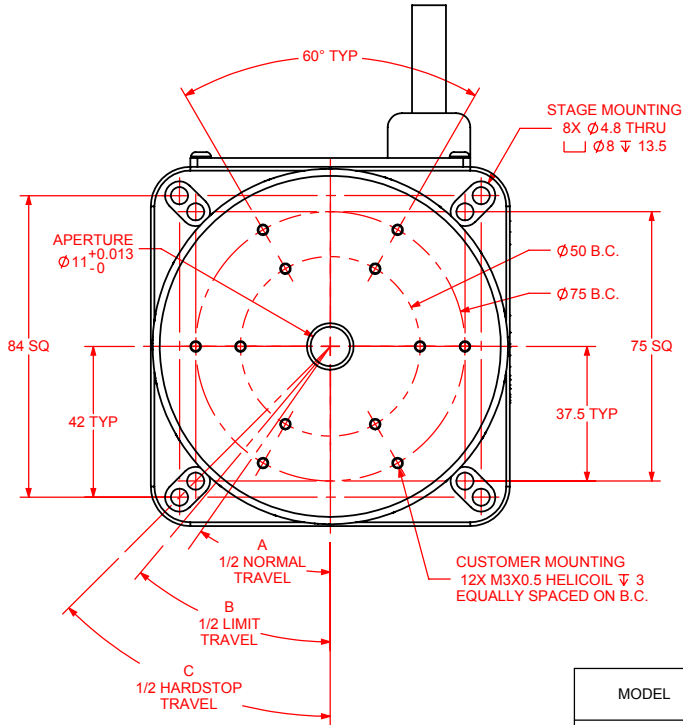


ANT95R plot showing best-in-class in-position stability.

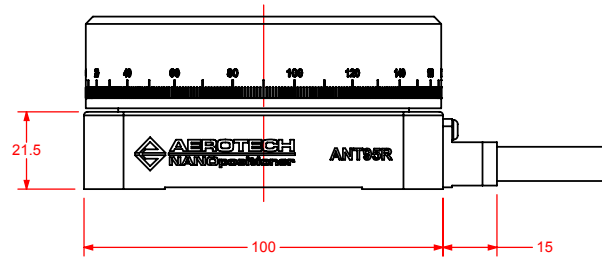
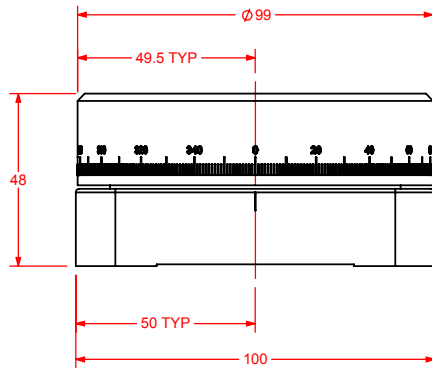


ANT95R radial error plot illustrating outstanding synchronous and asynchronous error motion performance.

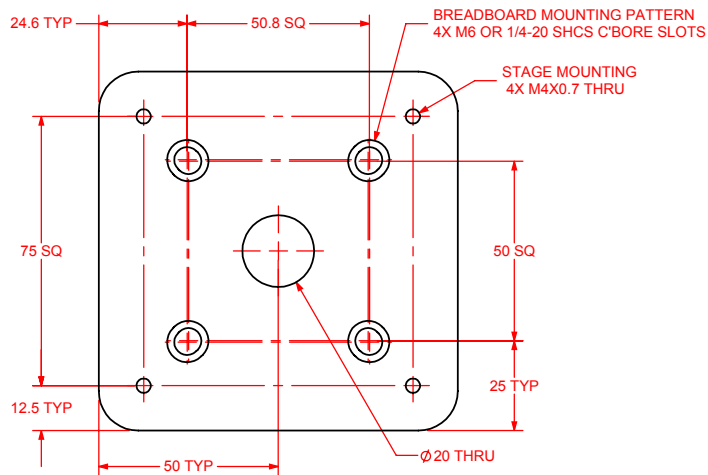
ANT95R DIMENSIONS



MODEL	TRAVEL [DEGREES]		
	A	B	C
ANT95R-020	10	15	27
ANT95R-180	90	95	107
ANT95R-360	360 CONT.	-	-



-MP (MOUNTING PLATE BREADBOARD)



DIMENSIONS: MILLIMETERS

